

Art Unit: 3600

CPTO

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2. (Original) A medical stand apparatus comprising:

a base set on the floor, the base having a post installed on the base, the post being horizontally articulated about an axis of rotation oriented in a predetermined direction with respect to the base, the post being provided with upper and lower articulations;

a parallel link mechanism supported by the upper articulation, the parallel link having a pair of parallel longitudinal links and a pair of lateral links;

a support arm extending from the upper lateral link of the parallel link mechanism, a front end of the support arm supporting an end link;

a crank articulated about a first articulation of the parallel link mechanism, the first articulation serving as a start point of the support arm;

a longitudinal sub-link parallel with the longitudinal links, a lower end of the longitudinal sub-link being articulated at a front end of a horizontal first upper protrusion formed on the post, one of the longitudinal links adjacent to the support arm, the crank, the longitudinal sub-link, and the first upper protrusion forming a first auxiliary parallel link;

a lateral sub-link parallel with the support arm, the lateral sub-link cooperatively moving in response to position of the longitudinal sub-link through the crank, an

upper end of the end link being articulated at a first end of the lateral sub-link opposite the crank, the support arm, the upper end of the end link, the lateral sub-link, and the crank forming a second auxiliary parallel link;

an interlocked longitudinal link always parallel with the longitudinal links, an upper end of the interlocked longitudinal link being articulated at the lower articulation, a lower end of the interlocked longitudinal link being articulated at a first end of an interlocked lateral link;

a second upper protrusion formed at a lower end of the longitudinal links, a front end of the second upper protrusion being connected to a front end of a lower protrusion formed at an upper end of the interlocked longitudinal link through an interlocked longitudinal sub-link, the orientation and length of a straight line between upper and lower articulations of the interlocked longitudinal sub-link being equal to those of a straight line between the upper and lower articulations;

a weight link connecting an end of the lower lateral link of the parallel link mechanism opposite the medical equipment and a second end of the interlocked lateral link, the weight link being parallel with a straight line between the upper articulation and the first end of the interlocked lateral link; and

a counterweight arranged at the second end of the interlocked lateral link,

the counterweight cooperatively moving toward and away from the lower articulation in response to movement of the medical equipment about the upper

articulation, the weight of the counterweight acting on the parallel link mechanism to keep the medical equipment at an optional spatial position.

3. (Original) The medical stand apparatus of claim 2, wherein

the lower articulation is offset from just below the upper articulation toward the medical equipment.

7. (Original) An assist-less medical stand apparatus for manipulating a medical equipment used for a patient on a patient table comprising:

a first articulation positioned at a first end of a first link;

a second articulation positioned at a second end of the first link, the second articulation being arranged at a predetermined position on a base;

a third articulation positioned at a first end of a second link;

a fourth articulation positioned at a second end of the second link, the first articulation, the third articulation, the fourth articulation, and the second articulation forming a first parallel link mechanism;

a fifth articulation positioned at a first end of a third link at a predetermined position with respect to the base;

a sixth articulation positioned at a second end of the third link, the first articulation, the sixth articulation, the fifth articulation, and the second articulation forming a second parallel link mechanism;

a seventh articulation positioned at a front end of a support arm extending from the first articulation;

an eighth articulation positioned at a first end of a fourth link;

a ninth articulation positioned at a second end of the fourth link, the eighth articulation and the ninth articulation being linked by an end link for holding the medical equipment and keeping a position thereof, the eighth articulation, the ninth articulation, the seventh articulation, and the first articulation forming a third parallel link mechanism;

a tenth articulation positioned below the second articulation on the base;

an eleventh articulation positioned at a first end of a fifth link;

a twelfth articulation positioned at a second end of the fifth link, and the second articulation, the eleventh articulation, the twelfth articulation, and the tenth articulation forming a fourth parallel link mechanism;

a thirteenth articulation positioned at a first end of a sixth link and supporting a counterweight, and a second end of the sixth link being articulated on the fourth articulation; and

a fourteenth articulation positioned at a first end of a seventh link, a second end of the seventh link being articulated on the thirteenth articulation, wherein:

the third and second parallel link mechanisms cooperate with each other through a linkage between the sixth and eighth articulations; and

the tenth and fourteenth articulations are linked with an eighth link which cooperates with the fourth parallel link mechanism.

9. (Original) The apparatus of claim 7, wherein
the tenth articulation is offset from just below the second articulation toward
the medical equipment.

10. (Original) The apparatus of claim 7 wherein the base is set on the floor.

12. (Original) The apparatus of claim 7, further comprising a rotary arm articulated on the
end link about a first principal axis of rotation, the rotary arm having a holder articulated on the
rotary arm about a second principal axis of rotation, the first principal axis of rotation and the
second principal axis of rotation intersecting, and the intersection being set to agree with the
gravitational center of the medical equipment.

14. (Original) The apparatus of claim 12 wherein the first principal axis of rotation and the
second principal axis of rotation are substantially orthogonal to each other.

CLAIMS 1,4-6,8,11 AND 13 ARE CANCELLED